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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NGUYEN, KEVIN M

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 07/26/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,171

Applicant(s)

HIROKI, MASA AKI

Examiner

Kevin M. Nguyen

Art Unit

2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The amendment filed on 05/24/2004 is entered. The rejection of claims 1-18 are maintained.
2. An abstract on a separate sheet is acknowledged.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirai et al (US 5,953,002).

As to claims 1-3 and 10-12, Hirai et al teaches a liquid crystal display (LCD) device associated with a method, the LCD comprising

A display can be completed by displaying the divided display data with two subframes. The display data uses method of the amplitude modulation (col. 8, lines 35-38).

The combination of $d1 = 0.92$ and $d2 = 0.392$ provides 63 gradation levels when the FRC method for 3 frames (i.e. 6 subframes) is used (col. 10, lines 1-2).

The order of applying the two divided data may be exchanged, whereby ± 1 and $\pm X_0$ are used as the divided data for a subframe, and ± 1 and $\pm Y_0$ are used as the divided data for the other subframe (col. 8, lines 62-65).

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In fig. 1, there are shown voltage values applied to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d_1=0.6$ and $d_2=0.8$ in Table 1 is used (col. 9, lines 18-21).

In signal voltages applied in a selection time, a portion changing in column voltages is in proportion to the display data d (col. 9, lines 28-30).

For displaying a continuous gradation, the present invention proposes use of the amplitude modulation (AM) method whereby the number of gradation levels can be remarkably increased (col. 9, lines 38-41).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4/1, 4/2, 4/3, 5/1-5/3, 6/1-6/3, 7/1-7/3, 8/1-8/3, 9/1-9/3, 13/10-13/12, 14/10-14/12, 15/10-15/12, 16/10-16/12, 17/10-17/12, and 18/10-18/12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirai et al in view of Katakura et al (US 6,057,824).

As to claims 4/1, 4/2, 4/3, 5/1-5/3, 6/1-6/3, 7/1-7/3, 8/1-8/3, 13/10-13/12, 14/10-14/12, 15/10-15/12, 16/10-16/12, and 17/10-17/12, Hirai et al teach all of the claimed limitations of claims 1-3 and 10-12, except for the frames are 1/60, 1/120, 1/24, 1/48, 1/96 second.

However, Katakura et al teach a related LCD device that includes the frame frequency 20-40Hz and the frame scanning frequency 60-120 Hz (column 17, lines 44-47).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the frame frequency 20-40Hz and the frame scanning frequency 60-120 Hz taught by Katakura et al for Hirai et al's frame frequency because this would provide display apparatus capable of a good halftone display while suppressing the flicker (column 2, lines 3-5 of Katakura et al).

As to claims 9/1-9/3 and 18/10-18/12, Katakura et al review the present invention relates to a display apparatus for use in a monitor, a video camera, a projector, a television, and a car navigation system (column 1, lines 10-13).

Response to Arguments

7. Applicant's arguments filed 05/24/2004 have been fully considered but they are not persuasive.

In response to applicant's argument that claims 1-3 and 10-12 recites "displaying an image by displaying plural frames; wherein each of the plural frames are divided into plural subframes; wherein respective voltages of picture signals supplied in plural subframe periods are changed throughout displaying the image so as to enlarge a voltage..." This argument is not persuasive because Hirai et al teaches

A display can be completed by displaying the divided display data with two subframes. The display data uses method of the amplitude modulation (col. 8, lines 35-38).

The combination of $d_1 = 0.92$ and $d_2 = 0.392$ provides 63 gradation levels when the FRC method for 3 frames (i.e. 6 subframes) is used (col. 10, lines 1-2).

The order of applying the two divided data may be exchanged, whereby ± 1 and $\pm X_0$ are used as the divided data for a subframe, and ± 1 and $\pm Y_0$ are used as the divided data for the other subframe (col. 8, lines 62-65).

In fig. 1, there are shown voltage values applied to a pixel with respect to various row waveforms and column waveforms in a case that a combination of $d_1 = 0.6$ and $d_2 = 0.8$ in Table 1 is used (col. 9, lines 18-21).

In signal voltages applied in a selection time, a portion changing in column voltages is in proportion to the display data d (col. 9, lines 28-30).

For displaying a continuous gradation, the present invention proposes use of the amplitude modulation (AM) method whereby the number of gradation levels can be remarkably increased (col. 9, lines 38-41).

These arguments are not persuasive because the teaching of Hirai et al meets the claimed limitations above. For example, referring to fig. 1,

Gradation level of amplitude modulation consists of 1(OFF), 0.8, 0.6, 0, -0.6, -0.8, -1(ON). Each gradation level number corresponds to one frame. Each gradation level number is changed and different.

Column waveform consists of 1.0, 1.0, 1.4, 0.2, 1.4, -0.2, 1.0, -1.0, -1.4, 0.2, -1.4, -0.2, -1.0, -1.0. Each column waveform number corresponds to one subframe. Each column waveform number is changed and different.

For these reasons, the rejections based on Hirai et al have been maintained.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Kevin M. Nguyen** whose telephone number is **703-305-6209**. The examiner can normally be reached on MON-THU from 9:00-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard A Hjerpe** can be reached on **703-305-4709**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for Technology Center 2600 only)

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Hand-delivered response should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Kevin M. Nguyen
Patent Examiner
Art Unit 2674

KN
July 14, 2004


XIAO WU
PRIMARY EXAMINER